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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,490	01/11/2005	Kyung-Ku Choi	81864.0039	6091

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EXAMINER

NGUYEN, TUYEN T

ART UNIT	PAPER NUMBER
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2832

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/502,490

Applicant(s)

CHOI ET AL.

Examiner

TUYEN T. NGUYEN

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/12/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takanabe [JP 06-069032] in view of Takahashi et al. [US 6,841,259 B1].

Takanabe discloses a magnetic element [figures 1-2] comprising:

- a composite magnetic thin film including:

- a first layer which is mainly composed of Fe or FeCo, with the saturation magnetization of 16 kG (1.6 T) or more by itself, and the first layer is constituted with a columnar structure of 1.4 or less aspect ratio or an amorphous structure, wherein the first layer comprising a T-L composition (here, T is Fe or FeCo, L is N), and

- a second layer which is mainly composed of Co-based amorphous alloy arranged on either of the surfaces of the first layer, having the properties by itself that the permeability is 1,000 or more (the measurement frequency: 10MHz), the saturation magnetization is 10 kG (1.0 T) or more, and the resistivity is 100  $\mu\Omega\text{cm}$  or more, wherein the first layer and the second layer are alternately laminated to form a multilayer film structure.

Takanabe discloses the instant claimed invention except for the use of only C [carbon] in

L.

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Takahashi et al. discloses Fe-based amorphous alloy thin film for magnetic device including C [carbon].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use Carbon [boron] in L of Takanabe's first layer, as suggested by Takahashi et al., for the purpose of improving magnetic flux density, magnetic permeability, magnetic anisotropy energy and corrosion resistance.

Regarding claims 3-5 and 17, Takanabe discloses the real part ( $\mu'$ ) of the complex permeability at 1 GHz is 400 or more, the quality factor Q ( $\mu'/\mu''$ ) is 4 or more, and the saturation magnetization is 14 kG (1.4 T) or more, wherein when T1 denotes the thickness of said first layer and T2 denotes the thickness of said second layer, T1 falls within the range from 3 to 70 nm and T1/T2 falls within the range from 0.15 to 3.50.

Regarding claim 7, Takanabe discloses the second layer is mainly composed of Co, and comprises at least one additional element selected from the group consisting of B, C, Si, Ti, V, Cr, Mn, Fe, Ni, Y, Zr, Nb, Mo, Hf, Ta and W.

Regarding claim 8, Takanabe discloses the second layer is selected from the group consisting of CoZr, CoHf, CoNb, CoMo, CoZr, CoZrTa, CoFeZr, CoFe, CoLiNb, CoZrMo, CoFeB, CoZrMo, CoZrMoNi, CoFeZrB, CoFeSiB and CoZrCrMo.

Regarding claim 9, Takanabe discloses the concentration of the element L contained in the first layer falls within the range from 2 to 20 at%.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takanabe in view of Takahashi et al., as applied to claims 1-5 above, and further in view of Takada et al. [JP 02-143510].

Takanabe in view of Takahashi et al. discloses the instant claimed invention except for the thickness ratio.

Takada et al. discloses when T1 denotes the thickness of said first layer and T2 denotes the thickness of said second layer, the thickness of said first layer T1 falls within the range from 0.5 to 3.0 nm and T1/T2 falls within the range from 0.8 to 3.0.

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the thickness ratio of Takada et al. in Takanabe, as modified, for the purpose of improving saturation magnetic flux density.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito [JP 07-029732] in view of Takanabe [JP 06-069032] and Takahashi et al.

Saito discloses a magnetic thin film for used in a monolithic microwave integrated circuit comprising:

- a plurality of magnetic thin film [6a, 6b];
- an insulating film [5] sandwiched between the magnetic layers; and
- a conductor coil [4] embedded in the insulating film.

Saito discloses the instant claimed invention except for the specific of the magnetic thin films.

Takanabe in view of Takahashi et al. discloses composite magnetic thin film [see above].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the magnetic thin film of Takanabe, as modified, in the device of Saito for the purpose of improving saturation magnetic flux density and permeability.

***Response to Arguments***

Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUYEN T. NGUYEN whose telephone number is 571-272-1996. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ELVIN ENAD can be reached on 571-272-1990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTN TTN

*Tuyen Nguyen*